## THE GIANT ALL TELE= SCOPES

The Great Telescope of 1900, ... by ...

Professor Garrett P. Serviss.

of worlds. The huge Deloncle tele- scope. caught a glimpse.

In a telescope the main thing is the trived a better plan. 

It is thus more than nine inches it is in the sky. est object glass in practical use—that the eye-piece end of the great tube will tance, would be a sight to be forever tude of its celestial artillery.

MARIS will greet her visitors next moon 1,000 times when used with the year not only with a world's ex- Yerkes telescope would magnify it 2,500 position, but with an exposition times if applied to the Deloncle tele-

scope, if the workmanship upon it To suspend a ton of glass at the end turns out to be as excellent as its of a heavy steel tube 180 feet long, and Junar scenery will be visible to the COVER THE SECRETS magnitude is gigantic, will reveal to then to swing the combination freely multitudes of spectators wonders in about an axis so as to sweep all parts the heavens of which the most favored of the sky, would manifestly tax the self the view will be yet more satisastronomers have heretofore hardly powers of mechanical science even in factory, and to the uninitiated, as this age, but the French have con- tounding. The makers of the Deloncle

will have by far the mightiest object on a bed of masonry, and its \$100,000 Owing to the unsteadiness of the air, the comparative light-gathering power glass in existence. It is, in fact, so eye will stare straight at a mirror, six even in the finest weather, such a will be as the squares of those numenormous that a new manner of mount- and a half feet in diameter, so mount- power, when applied to the moon, bers, or as 2,400 to 1,600 in favor of the ing it had to be devised. This immense ed and driven by clockwork that it can would produce more or less haziness Deloncle glass. In other words, the astronomic eye, composed of flint and reflect the image of any heavenly body and indistinctness of vision. Still, the new telescope will have 50 per cent crown glass lenses of exquisite purity into the object glass and keep it there of composition, and worked to curves immovable as long as may be desired. That power would bring the moon of mathematical exactness, will be The observer at the eye-piece end of within an apparent distance of only more than four feet-191/4 inches-in the telescope is under cover, and needs forty miles, and such an object as latter will be vastly inferior to the diameter, and will bring the rays of never to change his position. The the Lunar Alps, with their let-black Paris glass in light. light to a focus at the distance of 180 swinging mirror will enable him to see shadows, yawning pits miles in diamethe moon or a star, no matter where ter, tremendous ravines and canyons, er implies an increase in magnifying

of the Yerkes Observatory of the Chi-terminate in an exhibition hall, and it remembered. cago University-and about six inches is the intention to throw the image of I once saw the moon with the Liek made at Berlin and intended to give from the telescope upon a screen, where ters, and can readily imagine the senimage of the moon as it comes from three times more. But even more surprising is the su- the tube, without magnification with The great focal ler in the focal length of its lenses. The in diameter. All the mountain ranges, to apply high magnifying powers photographs. great Yerkes glass brings the light of craters, rings, mountains, the rugged without using inconveniently short. Wonderful effects may be produced moon or sun. In the matter of mag- ably to magnify the image of the glass the larger the quantity of light in photographs. nifying power there is a vast advan- moon on the screen, giving it a dlam- which it collects when pointed at the tage in this great focal length. The eter of, say, twenty or thirty feet, and heavens. same eye-piece that would magnify the in that case an astonishing display of

WILL THE GREAT AS-TRONOMIC EYE DIS-

spectators in the room.

With the eye placed at the tube iteffect would be startlingly interesting.

OF MARS AND VENUS?

telescope promise that it will bear a glass 40 inches in diameter. Call that magnifying power of 6,000 diameters. of the Paris telescope 49 inches, then more light than the greatest telescope at present in use, for the Berlin glass is not yet in operation. And even the

This increase in light-gathering powand bare, sharp-pointed peaks, seen capacity also, because it is impossible greater in diameter than the next larg- For the purposes of public exhibition however indistinctly at such a dis- to go beyond a certain point in magnification with a given amount of light in the image.

On account of its greater light powgreater than an immense object glass such a bright object as the moon direct telescope, magnified some 2,000 diame- er the Deloncle glass may be expected ing of vegetable life, and its hundreds to reveal millions of stars in the depths of strange canals, with their curious Germany the precedence in the magni- hundreds can see it at a time. The sation it would produce when enlarged of the universe which have as yet been feel in ovals and circles, expand and unseen by man, or, at most have sim- darken. y indicated their presence by slightly periority of the Deloncle object glass an eye-piece, will be nearly two feet loncle telescope, enabling the observer staining the sensitive plates in star tofore lain just at the limit of visil-

a star to a focus at a distance of 70- chasms and sea-like plains of the moon eye-pieces, is not its only advantage in the revelation to the eye of those 50 per cent more light and 100 per cent odd feet; the Deloncle glass carries the will be seen as in a picture. On account over every other existing glass. The mysterious spirals, billions of miles in more magnifying power for the solurays of light 180 feet before they are of the great quantity of light gathered astronomer is continually seeking for sweep, that constitute some of the tion of the mystery. Unfortunately all converged at a common point to by the immense object glass it is prob- more light in his telescopes. The nebulae, such as that of Andromeda, Mars will not be in a specially favormake an image of the star, or of the able that it will be possible consider- greater the diameter of hiis obect- and which at present are only visible able positionfor study next year, but

> habitants by community of interest utmost powers of the new glass can be The Yerkes telescope has an object- are the mysteries of the planets, and applied to it.

By a Clockwork Mobement a Movable Mirror Follows the Motion of a Star So as Point.

here also the opening of the Paris surprises in store

up its secret.

With every recurring Summer its white polar patches slowly melt away, its ruddy and golden expanses change

bility with existing telescopes.

The Deloncle glass now offers us in a few years it will come round More nearly affecting the earth's in- again, closer to the earth, and then the

"With the new long focus telescopes at Paris provided with an Always to Reflect Its object glass of unexampled size and power, it is a like the shall see things on Venus not yet dreamed of, and shall be able once for all to settle the questions of the possibility of people dwelling in The that world of perpetual Summer."-Professor Serviss.

In the meantime Venus will offer that of Mars. She is our nearer neighastronomical exhibitions may have herself for observation, veiled in a bor, and our true comrade in size rad mystery in some respects even more situation. Some of the best observa-The planet Mars has not yet yielded captivating to the imagination than tions ever obtained of her were made

## How Gunners in Future Will D

sent by electricity. The experts of the Bu-reau of Ordnance are now perfecting a scheme which involves two devices which dock and on the lower deck, wherever

are known as indicator and transmitter, many little disks covered by glass on which ' mand of an officer. appear such orders or marks as "First Di- cator for that number or division of the vision," "Second Division," "Shell Shrap-nel," "Cense Firing," "Commence Firing," In 1

mon in actual battle. The transmitter is also a plate into. The transmitter will be placed at the opwhich are inserted a number of keys or tion of the captain on the bridge or in the thumbserews like the keys which turn on or conning tower. The ship is cleared for acoff an electric light. At each key is a word tion. He wants to give the order,

N the naval battles of the future the or- or order on the indicator. The keys and ders from the bridge or the conn'ng the disks of the indicator are connected by

there are guns to be controlled or fired. A The indientor is a plate which contains certain number of guns are under the con-

In practical operation, suppose the capnot. The orders that are most come tain wishes to give a particular order by most in actual battle. or an order corresponding to a similar word mence firing." . He turns the key of

## England's Great Scientific Expedition Against the Poisonous Mosquiti BELIEVING that malaria is the most or, at least, to attempt to render human organized a notable expedition which it commanded by Surgeon-Major Ross, who great good resulted. Not only was the cd, it would not be found that they will, in a few days, send to the Gold Coast is recognized as the greatest authority in

D dangerous disease with which man has to contend, the British Government has decided to try to stamp it out, ment has decided to try to stamp it on the soldiers food, they infected it. The result is that in the British Army to the great of West Africa, where the disease is particularly deadly. This expedition will be men whose names are contend, it is recognized as the greatest authority in plague stayed and the famine which accompanied it relieved, but there was distinct the great of the great companied it relieved, but there was distinct to the Gold Coast is recognized as the greatest authority in plague stayed and the famine which accompanied it relieved, but there was distinct to the Gold Coast is recognized as the greatest authority in plague stayed and the famine which accompanied it relieved, but there was distinct to the Gold Coast is recognized as the greatest authority in plague stayed and the famine which accompanied it relieved, but there was distinct to the Gold Coast is recognized as the greatest authority in plague stayed and the famine which accompanied it relieved, but there was distinct to the Gold Coast is recognized as the greatest authority in plague stayed and the famine which accompanied it relieved, but there was distinct to the Gold Coast is recognized as the greatest authority in plague stayed and the famine which accompanied it relieved, but there was distinct to the Gold Coast is recognized as the greatest authority in plague stayed and the famine which accompanied it relieved, but there was distinct to the Gold Coast is recognized as the greatest authority in plague stayed and the famine which accompanied it relieved. The greatest authority in plague stayed and the famine which accompanies are companied in the greatest authority in plague stayed and the famine which accompanies are companied in the greatest authority in plague stayed and the famine which accompanies are companied in the greatest authority in plague stayed and the famine which accompanies are companied in the greate

Other European nations have sent out this is the greatest of all. Its purpose is to discover the exact con-

nection between germs of mainria and periment—for it was, at first, nothing ody were noted by the English attaches, those which are found in mosquitoes.

nore—seems to have stimulated the Britand the value of these notes seems to have It has taken quite a long while for any

as subjects requiring special investigation. Some time ago the British Government investigated the plague.

Later, it went very fully into the thing from genuinely humanitarian motives, and ful whether, if its victims could be count insects carried the germs of the disease because of its pestiferous climate, is de-

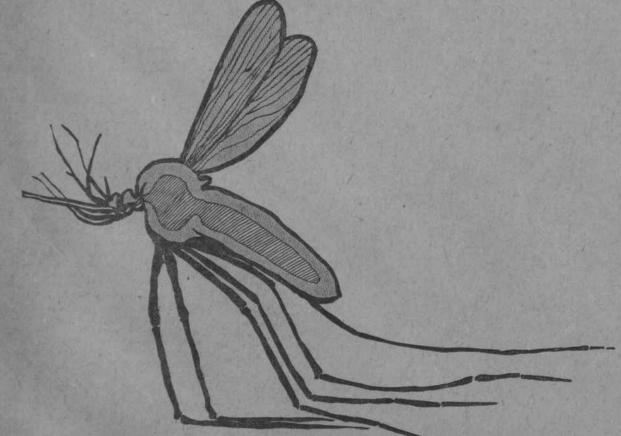
immunity from plague upon those inoculated with it and, in many cases, saved the lives of those who had already been taken to keep files attaches who accompanies from settling on the soldiers food as there is to keep him equipped with the most modern weapons. nected with some of the greatest discov- erer, the Haffkine serum, which conferred ports made by its attaches who accompanexpeditions to investigate malaria, but the lives of those who had already been take the task of fighting malaria and the

government to consider epidemic diseases pedition. Malaria has never been such a fice. For instance, our surgeons declared

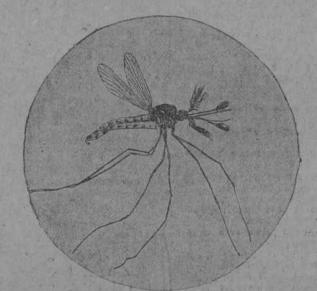
mosquito. Facts which our own surgeons The success which accompanied this ex- recognized and tried at the time to remish Government to initiate the present ex- been appreciated by the British War Ordisease as the plague; it does not crumple that flies and other insects were responup Its victims with the suddenness of sible for most of the typhoid fever which cholers, nor does it rival yellow fever in decimated our troops in the southern its men, equipped the force and sent it the fear which it inspires, but it is doubted to the southern its men, equipped the force and sent it the fear which it inspires, but it is doubted to the southern its men, equipped the force and sent it the fear which it inspires, but it is doubted to the southern its men, equipped the force and sent it the fear which it inspires, but it is doubted to the southern its men, equipped the force and sent it the fear which it inspires, but it is doubted to the southern its men, equipped the force and sent it the fear which it inspires, but it is doubted to the southern its men, equipped the force and sent it the fear which it inspires, but it is doubted to the southern its men, equipped the force and sent it is men, equipped the force and sent it is

Statistics concerning majaria have been hard to collect, but the British War Of fice has succeeded in gathering enough to make it believe that the stamping out of malaria will be fully as hard-if not r harder task-as that which confronted the scientists who went out to fight the

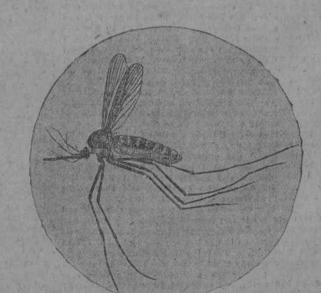
It has chosen its commanders, enlisted

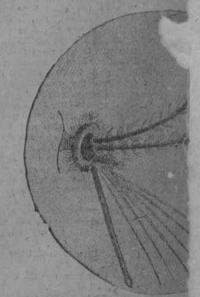


This Dissection of a Mosquito Shows How the Insect Injects the Microbes of Malaria. The Shaded Portlon Indicates the Sacs of Malarial Poison Connected with Its Sting.



The Harmless Male Mosquito, Who Can Be Recognized The Female Mosquito, Which Sucks Blood and Is Responsi-





Here Are the Barbed Lancets c She Puts Them T